



## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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<p>(21) International Application Number: PCT/SE99/02418</p> <p>(22) International Filing Date: 17 December 1999 (17.12.99)</p> <p>(30) Priority Data: 09/222,020 29 December 1998 (29.12.98) US</p> <p>(71) Applicant: TELEFONAKTIEBOLAGET LM ERICSSON (publ) [SE/SE]; S-126 25 Stockholm (SE).</p> <p>(72) Inventor: RÖJMYR, Tomas; Östra Nygatan 95C, S-931 35 Skellefteå (SE).</p> <p>(74) Agent: NORIN, Klas; Ericsson Radio Systems AB, Common Patent Department, S-164 80 Stockholm (SE).</p>		<p>(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).</p> <p><b>Published</b> With international search report.</p>	
<p>(54) Title: EXTERNAL ACCESS TO SUBSCRIPTION INFORMATION IN A TELECOMMUNICATIONS SYSTEM</p> <p>(57) Abstract</p> <p>A method and apparatus enables a given subscriber to efficiently receive and modify subscription information (400) related to a telecommunications service from an external point, such as a connection to the Internet (205). The given subscriber may use a software application, such as a web browser, to request (510) access to the subscription information. The WWW server (215) of the Internet routes (520) the request to the gateway node (105) of the telecommunications network (100, 180). Consequently, the gateway node may route (530) the request directly to the node (130, 185) storing the subscription information even when multiple nodes (130A, 130B, 185A, 185B) within the telecommunications network store subscription information for various subscribers. The given subscriber may (e.g., using the web browser interface) conveniently view (550) the entire range of available features (420) at once and/or request (560) modification of a customization (430) associated with an individual feature. For example, the subscriber may remotely add a new number to a list of numbers from which incoming calls are barred.</p>			
<pre> graph TD     A[Subscriber Requests Access to Subscription Information (SI)] --&gt; B[WWW Server Routes Request to GMSC]     B --&gt; C[GMSC Routes Request to SI Node]     C --&gt; D[SI Node Sends SI to Subscriber via the Internet]     D --&gt; E[Subscriber Views SI]     E --&gt; F[Subscriber Requests Modification(s) to Customization(s) of Feature(s)]     F --&gt; G[Request(s) Transmitted to SI Node]     G --&gt; H[SI Modified at SI Node]     H --&gt; I[SI that is Viewed by Subscriber is Updated]     </pre>			

## EXTERNAL ACCESS TO SUBSCRIPTION INFORMATION IN A TELECOMMUNICATIONS SYSTEM

### BACKGROUND OF THE INVENTION

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#### Technical Field of the Invention

The present invention relates in general to the field of telecommunications systems, and in particular, to enabling subscriber modifications of selected subscription features in telecommunications systems.

#### Description of Related Art

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Today's communications systems, whether wireless or wireline, offer subscribers a myriad of customization options for features to which they subscribe. Examples of such features include call waiting, call forwarding, and call blocking. Call waiting can generally be turned on or off. Call forwarding, on the other hand, may be customized by specifying the number to which calls should be forwarded.

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Moreover, call blocking may be customized by specifying one or more numbers that should be blocked. Once a subscriber has specified customizations for several features, it may become difficult to remember each setting or settings for every feature.

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Furthermore, with the increased number and complexity of subscriber services being offered, it is difficult to provide an overall picture of all customizations of all features. This difficulty is exacerbated in a wireless telephone environment because the primary avenues for communicating subscriber settings are the display of the mobile station (MS) and voice announcements.

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Consequently, there is a need to provide to subscribers a convenient mechanism for reviewing current feature customizations. Correspondingly, there is a need to enable communications systems to efficiently provide such a feature description even when different subscriber settings are stored in multiple locations within a single telecommunications network.

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## SUMMARY OF THE INVENTION

The deficiencies of the prior art are overcome by the method and system of the present invention. For example, as heretofore unrecognized, it would be beneficial for subscribers to be able to view descriptions of customizations of features to which they subscribe in their telecommunications network. In fact, it would be beneficial if subscribers could access their subscription information from a computer attached to an external network in an efficient manner without unduly taxing any network involved.

In accordance with one embodiment of the present invention, a subscriber may access subscription information over the Internet. Such an access may include, for example, retrieving the subscription information and/or modifying the subscription information. The subscriber uses a software application, such as a web browser, to submit a Mobile Subscriber Number (MSN) and a password. A server (e.g., a World Wide Web (WWW) server) routes the submitted information to an appropriate telecommunications network. The subscriber's subscription information is stored in a subscription information node, such as, for example, a Home Location Register (HLR) in a Public Land Mobile Network (PLMN) or a Service Control Point (SCP) in an intelligent overlay network (e.g., a Signaling System #7 (SS7) network).

These networks, however, may contain multiple HLRs and SCPs. Consequently, it can be difficult for the server to determine the correct subscription information node destination. In accordance with an advantageous aspect of the present invention, the server routes the submitted information (e.g., the MSN and the password) to a gateway node, such as a Gateway Mobile Services Switching Center (GMSC), in the telecommunications network. The gateway node may thereafter route the submitted information to the correct subscription information node using conventional signaling and/or a specially-designed protocol.

An important technical advantage of the present invention is that it enables a subscriber to see and change services settings using a data terminal with a view screen that is connected to the Internet.

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Another important technical advantage of the present invention is that it provides a mechanism for communication between a server and a subscription information node.

Yet another important technical advantage of the present invention is the ability to improve the efficiency of such communication by employing a gateway node as the Internet access point.

The above-described and other features of the present invention are explained in detail hereinafter with reference to the illustrative examples shown in the accompanying drawings. Those skilled in the art will appreciate that the described embodiments are provided for purposes of illustration and understanding and that numerous equivalent embodiments are contemplated herein.

#### BRIEF DESCRIPTION OF THE DRAWINGS

A more complete understanding of the method and system of the present invention may be had by reference to the following detailed description when taken in conjunction with the accompanying drawings wherein:

FIGURE 1A illustrates a portion of an exemplary wireless telecommunications network;

FIGURE 1B illustrates a portion of an exemplary SS7 network that may overlay the wireless telecommunications network;

FIGURE 2A illustrates an exemplary embodiment in accordance with a first aspect of the present invention;

FIGURE 2B illustrates another exemplary embodiment in accordance with a second aspect of the present invention;

FIGURE 3A illustrates an exemplary general sequence diagram in accordance with the present invention;

FIGURE 3B illustrates an exemplary protocol-specific sequence diagram in accordance with the present invention;

FIGURE 4 illustrates an exemplary display of subscription information for a subscriber in accordance with the present invention; and

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features and established customizations are stored in subscriber information (e.g., a subscriber data record) in a subscription information node, such as the HLR 130. It should be noted that the exemplary wireless network portion 100 includes more than a single HLR 130. The gateway node 105 is also connected to an SS7 network via communication line 115. This Intelligent SS7 Network includes a Signal Transfer Point (STP) 120.

Referring now to FIGURE 1B, a portion of an exemplary SS7 network (designated generally by 180) that may overlay the wireless telecommunications network is illustrated. The exemplary SS7 network portion 180 may overlay the exemplary wireless network portion 100 of FIGURE 1A as indicated by the presence of the STP 120 in both FIGURES. An SCP 185 and a Service Switching Point (SSP) 190 are interconnected to and interoperative with the STP 120 in conventional manners as known to those of ordinary skill in the art. Notably, in the intelligent SS7 network portion 180, more than a single subscription information node, namely two SCPs 185, is shown. It should be understood that the present invention is equally applicable to other configurations of the exemplary SS7 network portion 180, including those configurations with other numbers and/or types of nodes.

Referring now to FIGURE 2A, an exemplary embodiment in accordance with a first aspect of the present invention is illustrated (designated generally by 200). The Internet 205 includes a WWW server 215. The WWW server 215 is connected to the gateway node 105 via a communication line 210, which operates in accordance with a Transmission Control Protocol/Internet Protocol (TCP/IP). The gateway node 105 is connected via communication line 110A to an HLR1 130A and via communication line 110B to an HLR2 130B. The gateway node 105 may communicate with the HLR1 130A and the HLR2 130B using conventional messages of a conventional protocol, such as the Mobile Application Part (MAP) protocol, or special-purpose messages in a MAP or other protocol format.

The subscriber contacts the WWW server 215 using an Internet application, such as a web browser. The Internet application preferably displays relevant information using a HyperText Markup Language (HTML) page 220. Alternatively, other (especially Internet-related) software and/or protocols may be used to display

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and/or interact with the relevant information. Additionally, and by way of example and not limitation, Java-enabled or Java-based software may be employed by the subscriber. Continuing now with FIGURE 2A, the subscriber interacts with the subscription information using the HTML page 220. For example, the subscriber 5 enters an identification, such as a Mobile Subscriber Number (MSN) 225, and an authentication, such as a password 230, that may be subsequently submitted. It should be understood that other identification options and authentication techniques are within the scope of the present invention. The MSN 225 and the password 230 are submitted via the HTML page 220 and the WWW server 215 to the gateway node 105 to initiate a subscription information access. Therefore, it is preferable that the 10 identification option selected be an option that enables the gateway node 105 to route the subscription information access request to the HLR that contains the subscriber's subscription information. It should be noted that other computer networks, such as a corporate intranet, may be the origination point for the subscription information access 15 request instead of the Internet.

Referring now to FIGURE 2B, another exemplary embodiment in accordance with a second aspect of the present invention is illustrated (designated generally by 280). This second aspect is similar to the first aspect explained above with reference to FIGURE 2A. However, the subscription information to be accessed is stored at a 20 subscription information node in an intelligent SS7 network. The gateway node 105 is connected via the communication line 115A to the SCP1 185A and via the communication line 115B to the SCP2 185B. The gateway node 105 may communicate with the SCP1 185A and the SCP2 185B using conventional messages of a conventional protocol, such as the Intelligent Network Application Part (INAP), 25 protocol, or special-purpose messages in an INAP or other protocol format.

In either the first or the second aspect of the present invention, as illustrated in FIGURE 2A and FIGURE 2B, respectively, the WWW server 215 routes subscription information access requests to the gateway node 105. The gateway node 105 is then able to forward the request directly to the appropriate subscription 30 information node based on the submitted identity. Advantageously, inefficient excess telecommunications network signaling is reduced (because the WWW server 215 need

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not interrogate each possible subscription information node), and unnecessary access delays are decreased (because the WWW server 215 need not sequentially interrogate subscription information nodes until the appropriate node is contacted). Moreover, the WWW server 215 is not required to store and use an additional database.

5 Referring now to FIGURE 3A, an exemplary general sequence diagram in accordance with the present invention is illustrated. The sequence diagram 300 illustrates signals exchanged between and among the Internet 205, the gateway node 105, and an HLR 130 or an SCP 185 (designated generally as "HLR/SCP 130/185"). The signals may be, for example, messages, packets, or datagrams formatted into a known protocol (e.g., TCP/IP between the Internet 205 and the gateway node 105, MAP or INAP between the gateway node 105 and the HLR/SCP 130/185, etc.) or a specially-designed protocol. The subscriber, using an Internet application, initiates a subscription information access by submitting certain information (signal 305) via the WWW server 215 to the gateway node 105. The information may include the MSN 10 225 and the password 230 (of FIGURES 2A and 2B). The gateway node 105 consults its internal database to determine the appropriate HLR/SCP 130/185 based, at least in part, on the MSN 225. The gateway node 105 then forwards the identification and authentication information to the HLR/SCP 130/185 to begin a subscription information session (signal 310).

15 20 The subscriber, from the Internet 205, requests subscription information (signal 315). The gateway node 105 then forwards the instruction to send the subscription information (signal 320) to the HLR/SCP 130/185. The HLR/SCP 130/185 transmits the subscription information to the gateway node 105 (signal 325). The gateway node 105 then forwards the subscription information to the subscriber via the Internet 205 25 (signal 330). After the subscriber has reviewed the various customizations of the selected services as displayed from the subscription information, the subscriber transmits a request to modify the subscription information from the Internet 205 (signal 335). The gateway node 105 then forwards the request to modify the subscription information to the HLR/SCP 130/185 (signal 340). This exemplary 30 signal order and sequence flow advantageously enables the subscriber to modify the subscription information without receiving the subscription information from the

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HLR/SCP 130/185, if the modification request immediately follows the initiation of the subscription information access. (Thus, the signals 315-330 would be superfluous in this alternative.) This is possible, for example, when the subscriber knows what change(s) are desired without needing to review the subscription information.

5 Furthermore, the Internet software application may be configured so as to permit the subscriber to submit the subscription information modification request simultaneously with the identification and authentication information. (Thus, the signals 315-330 would be superfluous in this alternative, and the signals 305/335 and 310/340 would be combined with each other, respectively.) On the other hand, the  
10 method and system of the present invention may be set up so that the default procedure is for the HLR/SCP 130/185 to automatically send the subscription information to the subscriber on the Internet 205 after the HLR/SCP 130/185 receives the identification and authentication information. (Thus, the signals 315-320 would be superfluous in this alternative.)

15 Continuing now with FIGURE 3A, the HLR/SCP 130/185 transmits an acknowledgment to the gateway node 105 indicating that the subscription information has been successfully modified (signal 345). If necessary, the HLR/SCP 130/185 may transmit a non-acknowledgment signal. The gateway node 105 then forwards the acknowledgment of the subscription information modification to the Internet 205  
20 (signal 350). The subscriber may conclude the session by signaling to the gateway node 105 to terminate the access (signal 355). The gateway node 105 may then forward an end subscription information session signal to the HLR/SCP 130/185 (signal 360).

25 Referring now to FIGURE 3B, an exemplary protocol-specific sequence diagram in accordance with the present invention is illustrated. The sequence diagram 380 illustrates signals exchanged between and among the Internet 205 (as shown in FIGURE 3A but not explicitly in FIGURE 3B), the gateway node 105, and the HLR/SCP 130/185. The signals, in this exemplary embodiment, are formatted according to TCP/IP between the Internet 205 and the gateway node 105 and according to MAP/INAP between the gateway node 105 and the HLR/SCP 130/185.  
30 The signals 315, 330, 335, and 350, which are shown more completely in the sequence

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diagram 300 (of FIGURE 3A), between the Internet 205 and the gateway node 105 are not shown in detail in FIGURE 3B so as to avoid obscuring the details of the signals between the gateway node 105 and the HLR/SCP 130/185 of the sequence diagram 380.

5       The sequence diagram 380 illustrates one exemplary manner in which the signals 320, 325, 340, and 345 (of the sequence diagram 300 of FIGURE 3A) may be effectuated using MAP/INAP. It should be noted that in signals 320', 325', 340', and 345' the text above the signal arrows represents the dialogue level messages, the text below the signal arrows represents the primitive level, and the text in the parentheses represents the relevant data/operation. After the gateway node 105 receives a request for subscription information (signal 315) from the Internet 205 (e.g., using an IP-based signal), the gateway node 105 begins a Transaction Capability Application Part (TCAP) dialogue with the HLR/SCP 130/185. The "BEGIN" message/"INVOKE" component (signal 320') is sent to the HLR/SCP 130/185. The operation/data in the signal 320' is "SEND SI" (where "SI" is an abbreviation for "subscription information"). The HLR/SCP 130/185 responds by sending a "CONTINUE" message/"RESULT" component (signal 325') to the gateway node 105. The operation/data in the signal 325' is "SEND SI".

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After the Internet 205 and the gateway node 105 exchange the signals 330 and 335 (as explained above with reference to FIGURE 2A), the gateway node 105 sends to the HLR/SCP 130/185 a "CONTINUE" message/"INVOKE" component (signal 340'). The operation/data in the signal 340' is "MODIFY SI". The HLR/SCP 130/185 responds by sending an "END" message/"RESULT" component (signal 345') to the gateway node 105. The operation/data in the signal 345' is "MODIFY SI". The gateway node 105 may then acknowledge the modified subscription information (signal 350) to the Internet 205. In an exemplary embodiment, the "SEND SI" data/operation includes the MSN 225 and the password 230 in the "INVOKE" component of the signal 320' and includes subscription information in the "RESULT" component of the signal 325'. Likewise, in an exemplary embodiment, the "MODIFY SI" data/operation includes the altered subscription information (or altered portion thereof and/or request therefor) in the "INVOKE" component of the signal 340' and

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includes the altered subscription information (in its entirety or only some portion thereof) in the "RESULT" component of the signal 345'.

Referring now to FIGURE 4, an exemplary display of subscription information for a subscriber in accordance with the present invention is illustrated. Subscription information 400 is composed of all or part of the subscriber information in the subscriber data record, which is stored and maintained in the associated subscription information node. In FIGURE 4, the subscription information 400 illustrates at least a portion of the subscriber information in a form that may be used on a view screen to provide to the subscriber a description of the wireless account and available features.

The subscription information 400 preferably is displayed on an HTML page 220 using a web browser or other HTML-capable software application. The subscription information 400 may be displayed, for example, on a large view screen of a data terminal device so that the subscriber may easily review all settings of all services/features. It should be noted that the specific subscription information 400 shown is exemplary only and that other subscriber information, such as other account information or additional features or wireless contract details or wireless capabilities (e.g., coverage area), may be displayed in the same or a different organizational structure.

The subscription information 400 includes account information 410, which includes, by way of example, the MSN, the subscriber's name, the MS's telephone number, and the wireless account number. It should be understood that less or additional data may instead be included within the account information 410. The subscription information 400 also includes a listing of the features (e.g., the services) 420 available to the subscriber and their various statuses. The status may include, for example, whether the feature is activated (e.g., turned "on" or in effect) and whether any customizations are in effect. The features listing 420 may include, by way of example, the call barring, call waiting, call forwarding, and multi-party calling services, and any other service(s)/feature(s). For each of the individual features in the features listing 420, the available and/or activated customizations 430 may be displayed. The subscriber is therefore able to conveniently review the subscription information 400 and request desired modifications accordingly. For instance,

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assuming that the subscriber has a barred number only under the Customization #1 and that the subscriber wishes to add a second number, the subscriber may request the institution of a second customization (e.g., the Customization #2) under the call barring service. The modification request is routed to the subscription information node as explained above with reference to, for example, FIGURES 2A, 2B, 3A, and 3B.

Referring now to FIGURE 5, an exemplary method in flowchart form for accessing subscription information in accordance with the present invention is illustrated. Flowchart 500 illustrates an embodiment in which the subscriber retrieves the subscription information and then requests a modification thereof. Initially, a subscriber requests access to subscription information (step 510) using, for example, a browser or other software application program that understands HTML. The WWW server (or any general Internet/Intranet node or router) routes the request to a gateway node (e.g., GMSC) of the subscriber's telecommunication network (step 520). The gateway node routes the request to the subscription information node (step 530).

The subscription information node sends the subscription information to the subscriber via the Internet (or Intranet, etc.) (step 540). The subscription information node may send the subscription information through the gateway node for forwarding to the Internet using, for example, an Internet Point of Presence (INET-POP). Alternatively, the subscription information node may send the subscription information to the WWW server without using the INET-POP. For example, the INET-POP may be bypassed if the subscription information node also has direct access to the Internet (the initial request may include the Internet address of the WWW server). This reduces telecommunications network signaling while still retaining at least one benefit of the present invention (e.g., alleviating the burden on the WWW server to know which subscription information node to route the initial request to). Other routing paths from the subscription information node to the WWW server are within the scope of the present invention as well.

Once the software application receives and displays the subscription information, the subscriber may view the subscription information (step 550). If the subscriber wishes to make changes to the subscription information, the subscriber

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5 requests one or more modifications of one or more customizations available under one or more features (step 560). The request(s) are transmitted to the subscription information node (step 570) through the gateway node or through a routing path that was previously established (e.g., when the subscription information node initially sent the subscription information). The subscription information is modified at the subscription information node (step 580). The modification(s) to the subscription information may then be acknowledged by, for example, enabling the subscriber to view the updated subscription information (step 590).

10 Although preferred embodiment(s) of the method and system of the present invention have been illustrated in the accompanying Drawings and described in the foregoing Detailed Description, it will be understood that the present invention is not limited to the embodiment(s) disclosed, but is capable of numerous rearrangements, modifications, and substitutions without departing from the spirit and scope of the present invention as set forth and defined by the following claims.

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WHAT IS CLAIMED IS:

1. A method for routing a request to access subscriber information to a telecommunications network from an external network, comprising the steps of:
  - 5 transmitting said request to access subscriber information to said telecommunications network from said external network;
  - directing said request to access subscriber information through a gateway node of said telecommunications network; and
  - 10 routing said request to access subscriber information to a node of said telecommunications network that stores said subscriber information based, at least in part, on information at said gateway node.
2. The method according to Claim 1, further comprising the step of sending at least a portion of said subscriber information to said external network.
3. The method according to Claim 1, further comprising the step of displaying at least one customization of at least one feature.
  - 15 4. The method according to Claim 3, further comprising the step of transmitting a request to modify said at least one customization of said at least one feature.
  5. The method according to Claim 1, wherein said step of transmitting said request to access subscriber information further comprises the step of transmitting a request to retrieve said subscriber information.
    - 20 6. The method according to Claim 1, wherein said step of transmitting said request to access subscriber information further comprises the step of transmitting at least one of an identification number and a password.

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15. The method according to Claim 1, wherein said gateway node of said telecommunications network comprises a gateway mobile services switching center.

16. A method for routing a request to access subscriber information to a telecommunications network from the Internet, comprising the steps of:

5 transmitting said request to access subscriber information to said telecommunications network from a first node, said first node being part of the Internet;

directing said request to access subscriber information from said first node to a gateway node of said telecommunications network; and

10 routing said request to access subscriber information to a second node, said second node being part of said telecommunications network and storing said subscriber information, based, at least in part, on information at said gateway node.

17. A method for routing a request from a subscriber for retrieving subscriber information to a telecommunications network from an external network,  
15 comprising the steps of:

formulating, by said subscriber, said request using a software application;

transmitting said request to a first node, said first node being part of said external network;

20 directing said request over said external network from said first node to a gateway node of said telecommunications network;

routing said request to a second node, said second node being part of said telecommunications network and storing said subscriber information, based, at least in part, on information at said gateway node; and

25 sending at least a portion of said subscriber information to said software application.

18. The method according to Claim 17, further comprising the steps of:

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formulating, by said subscriber, a modification request using said software application; and  
transmitting said modification request to said second node.

19. The method according to Claim 17, further comprising the step of  
5 modifying said subscriber information as requested by said subscriber.
20. The method according to Claim 17, further comprising the step of sending modified subscriber information to said software application to update subscriber information at said software application.

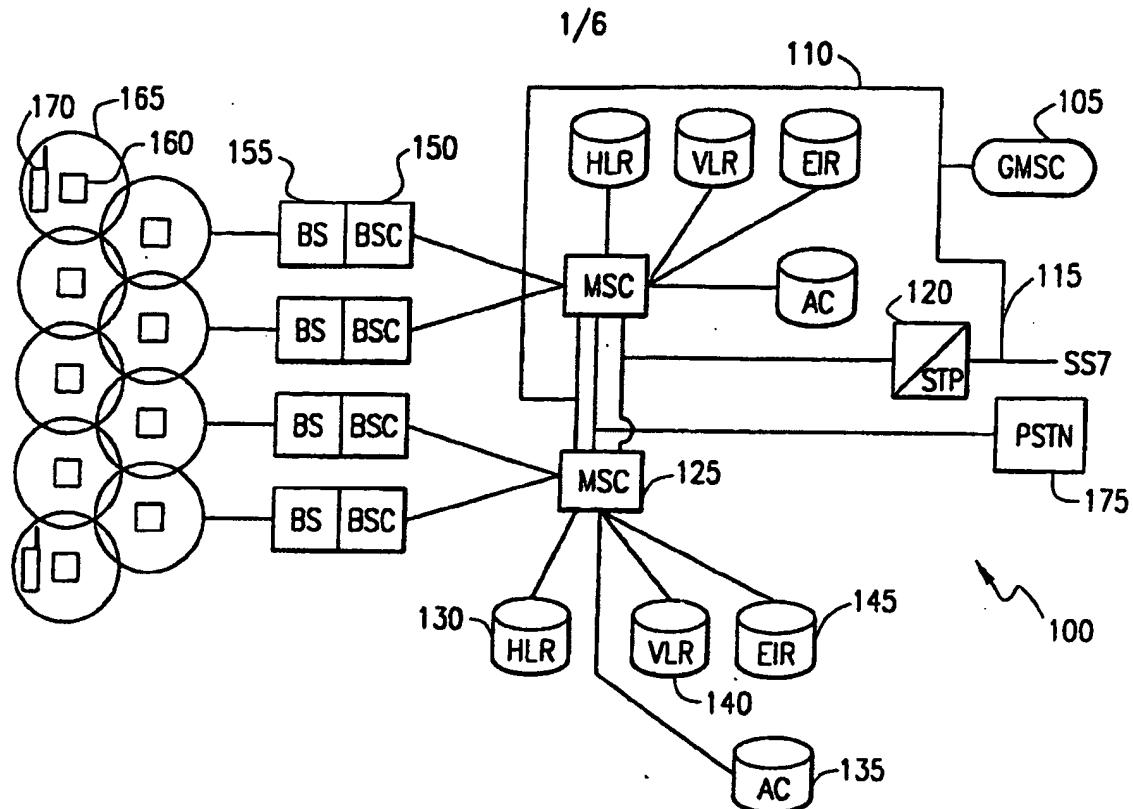


FIG. 1A

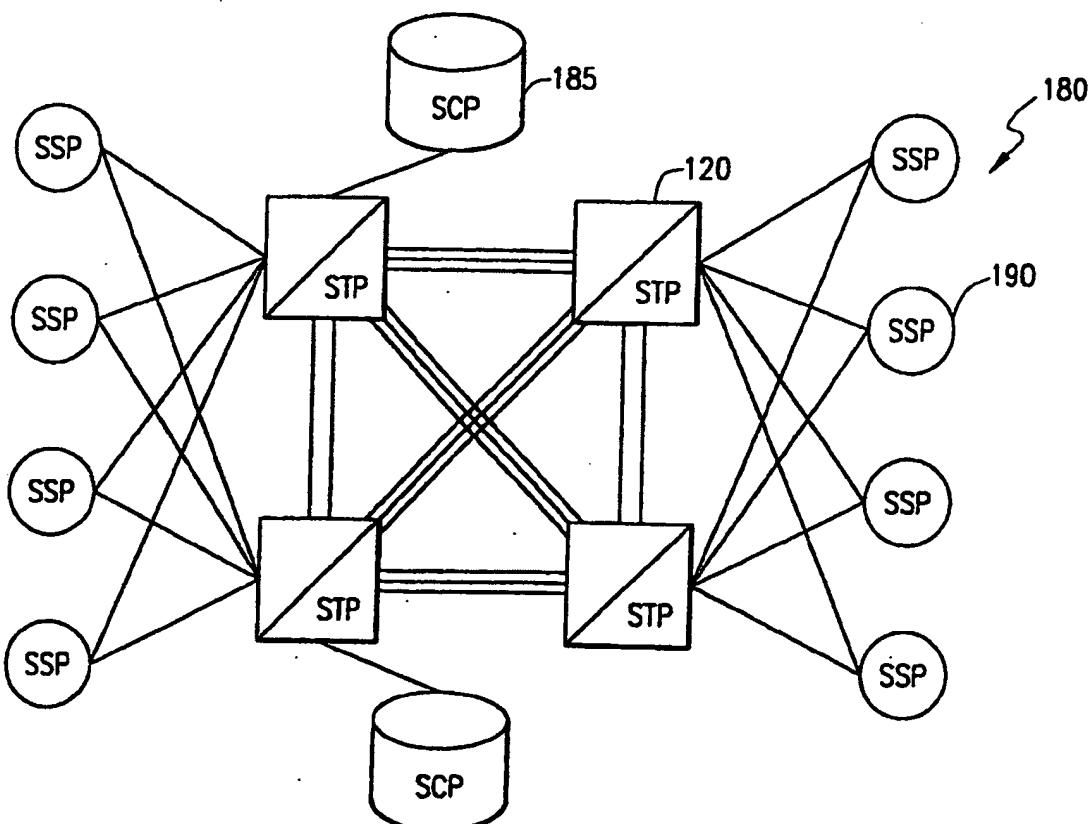


FIG. 1B

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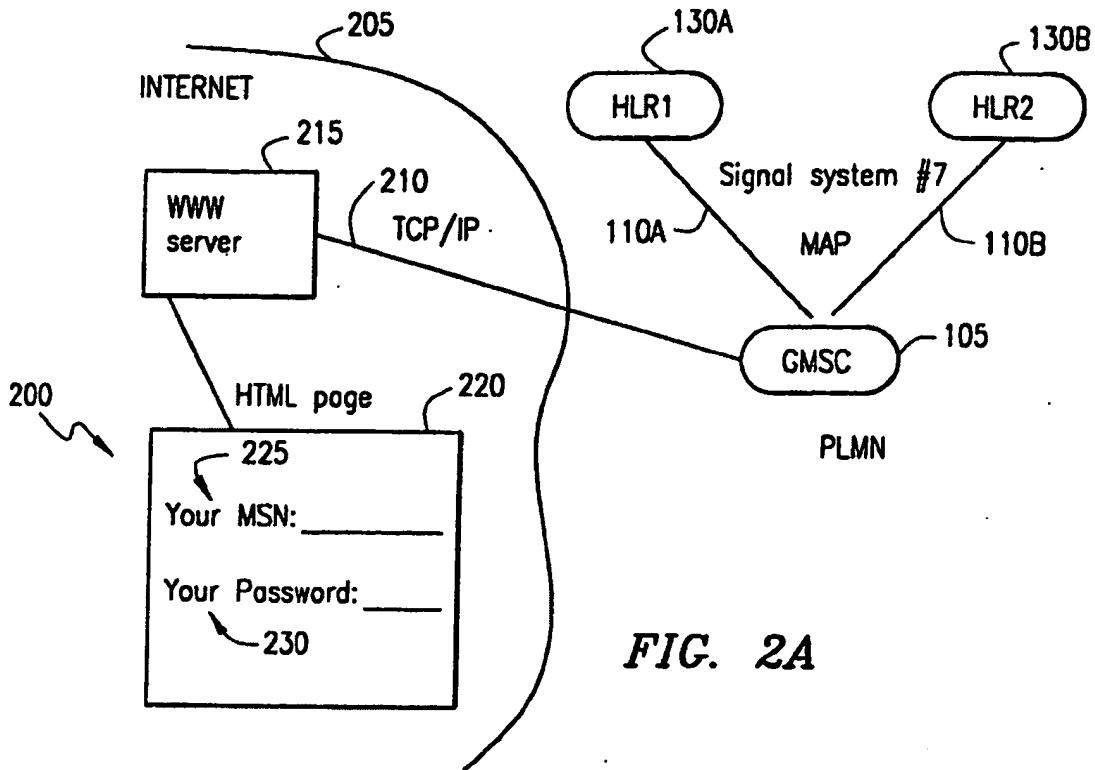


FIG. 2A

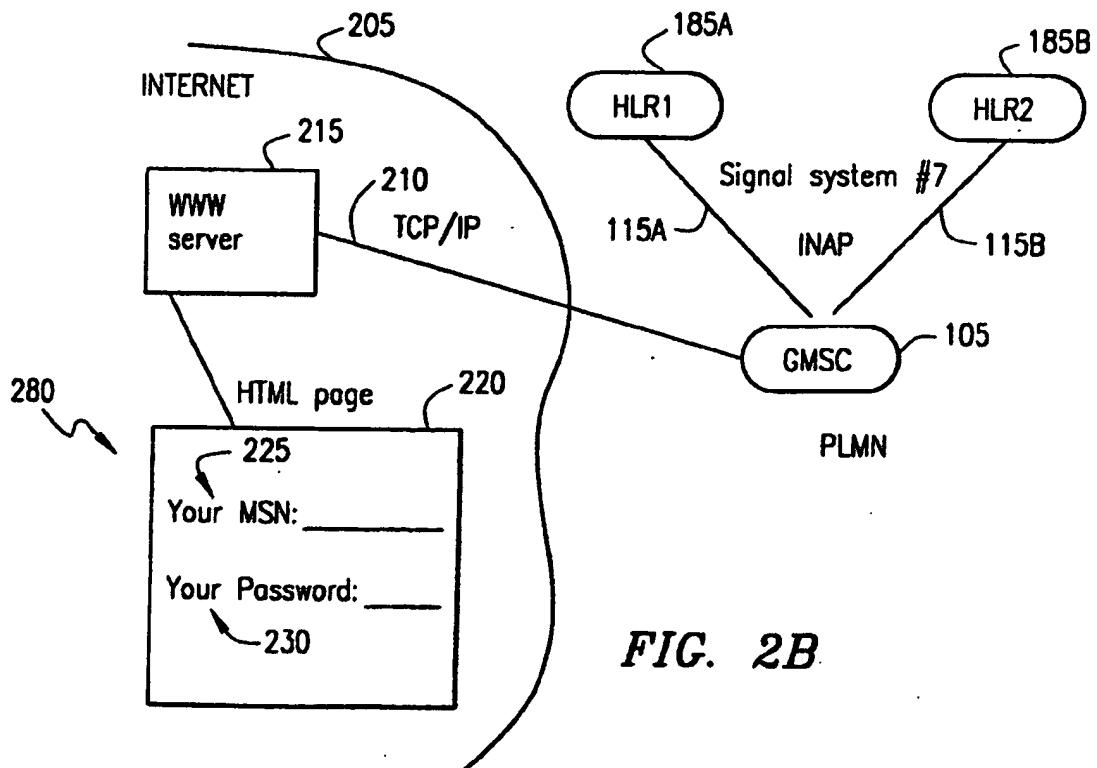


FIG. 2B

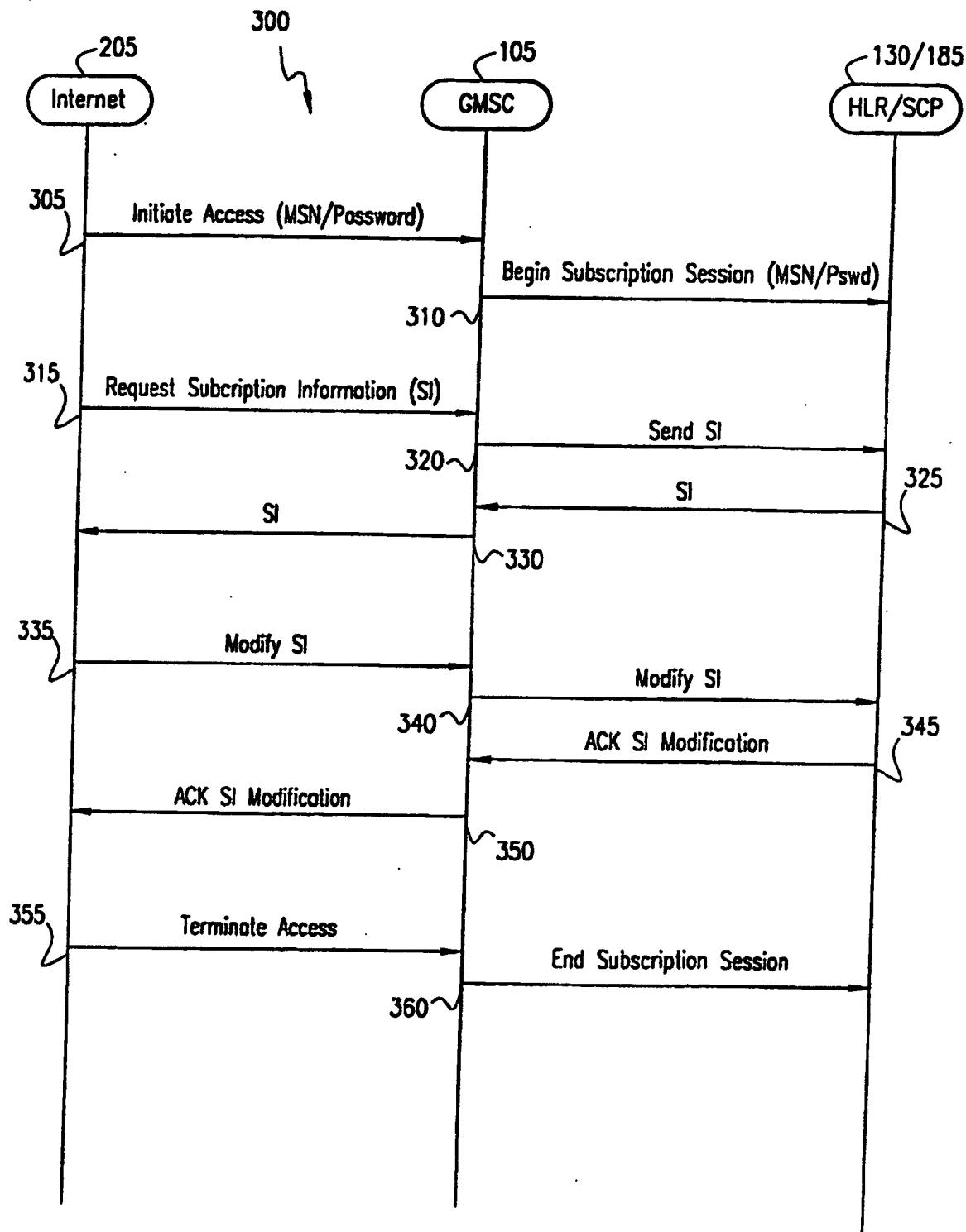


FIG. 3A

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SUBSCRIPTION INFORMATION		FEATURES/SERVICES							
MOBILE SUBSCRIBER NUMBER:	400	410					420		
NAME:		430							
TELEPHONE NUMBER:									
ACCOUNT NUMBER:									
Call Barring		Customization #1		Customization #2		Customization #N		Call Waiting	
								Call Forwarding	
								Multi-Party Calling	
								Other Service(s) / Feature(s)	

FIG. 4

## INTERNATIONAL SEARCH REPORT

Examination Application No.  
PCT/SE 99/02418

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 7 H04M3/42

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
IPC 7 H04N H04M H04Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 98 04065 A (BELL COMMUNICATIONS RES) 29 January 1998 (1998-01-29) abstract page 11, line 16 -page 12, line 26 page 13, line 24 -page 21, line 8 figures 2,3 —	1-10, 16-20
X	MIZUNO O ET AL: "IN SERVICE CUSTOMIZATION THROUGH THE INTERNET" IEEE INTELLIGENT NETWORK WORKSHOP. PROCEEDINGS, vol. 2, 1 January 1997 (1997-01-01), page COMPLETE XP000775651 the whole document —	1-10, 16-20
X	EP 0 847 176 A (IBM) 10 June 1998 (1998-06-10) the whole document —	1-10, 16-20

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

## \* Special categories of cited documents :

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the International filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*T\* document published prior to the International filing date but later than the priority date claimed

- \*T\* later document published after the International filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- \*K\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- \*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
- \*B\* document member of the same patent family

Date of the actual completion of the International search

16 March 2000

Date of mailing of the International search report

24/03/2000

Name and mailing address of the ISA

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**INTERNATIONAL SEARCH REPORT**

Information on patent family members

Priority date	Application No
PCT/SE 99/02418	

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